## Chapter 3

## 2 Dimensional Motion and Vectors

## Intro to Vectors

3.1

## Objectives

- Distinguish between a scalar and a vector. $\qquad$
- Add and subtract vectors by using the graphical method.
- Multiply and divide vectors by scalars.


## Scalars and Vectors

- A scalar is a physical quantity that has magnitude but no direction
- Volume, speed
- They are italicized in the book ( $v=2 \mathrm{~m} / \mathrm{s}$ )
- A vector is a physical quantity that has both magnitude and direction.
- Velocity, displacement
- They are bolded in the book ( $\mathbf{v}=2 \mathrm{~m} / \mathrm{s} \mathrm{N}$ )


## Resultant

- The resultant is a vector that represents the $\qquad$ combination of 2 or more vectors
- In a straight line, it is easy to find a resultant. $\qquad$
- You go 30 m north and then 10 m south
- $30 m+(-10 m)=20 m$ North


## Graphical Addition of Vectors

- Using a piece of graph paper you can make your vectors
- Then draw the resultant and then measure it and find the angle


Example


You walk 6 meters East and then 6 meters North

Example


You walk 10 meters East and then 7 meters North

## Example



You walk 6 meters East, 4 meters North, and 2 meters East

